

REMARKS

Upon entry of this response and amendment, claims 18-22 and 24-38 are pending in this application. Claim 18 has been amended to incorporate language from the specification regarding the method of making the polyurethane dispersions. Support for the amendment to claim 18 can be found in the specification as originally filed, particularly at page 16, Working Example A.1. Accordingly, Applicants submit that no new matter within the meaning of 35 U.S.C. 132 is added by the amendments.

In view on the foregoing amendments and the following remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections of the claims.

1. Rejection of claims 18-22 and 24-38 under 35 U.S.C. § 112, second paragraph.

Claims 18-22 and 24-28 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner asserts: (a) it is unclear what type of polymolecular weight is intended by the instantly claimed molecular weight of the claimed higher molecular weight polyol component; (b) it is unclear what the weight percentages of the instantly claimed components are based upon.

RESPONSE

Applicants respectfully traverse the rejection of claims 18-22 and 24-28 under 35 U.S.C. § 112, second paragraph.

Regarding item (a), Applicants submit that in view of the amendments submitted herewith, claim 18 is clear and definite. Specifically, claim 18 has been amended to specify that the recited molecular weights are number average molecular weights.

Regarding item (b), in view of the amendments submitted herewith, Applicants submit a skilled artisan would be able to ascertain what the weight percentages of the presently claimed subject matter is based on. More specifically, amended claim 18 now expressly recites the basis for the weight percentages of the presently claimed subject matter by reciting, "wherein the wt% values in steps (a)-(f) are based on the overall weight of said dispersions produced."

In view of the foregoing, Applicants submit that presently claimed subject matter is clear and definite within the meaning of 35 USC § 112, second paragraph. Thus, the Examiner is respectfully requested to withdraw this rejection.

2. Rejection of Claims 18-22 and 24-38 under 35 U.S.C. § 112, first paragraph

Claims 18-22 and 24-38 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner asserts that the recited

molecular weights do not specify "average molecular weight" or the type of average molecular weight.

RESPONSE

Applicants submit that in view of the amendments submitted herewith, this objection has been obviated. Specifically, claim 18 has been amended to specify that the recited molecular weights are number average molecular weights.

In view of the foregoing, Applicants submit that presently claimed subject matter is fully enabled by the present specification within the meaning of 35 USC § 112, first paragraph. Accordingly, the Examiner is respectfully requested to reconsider and withdraw this rejection.

3. Rejection of Claims 18-22 and 24-38 under 35 U.S.C. § 103 (a)

Claims 18-22 and 24-38 stand rejected under 35 U.S.C. §103 (a) as being unpatentable over U.S. Patent No. 4,408,008 to Markusch (the '008 patent) for the reasons set forth in the Office Action.

RESPONSE

Applicants respectfully traverse the rejection of claims 18-22 and 24-28 under 35 U.S.C. § 103(a).

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) some suggestion or motivation to modify the

references exists; (2) a reasonable expectation of success; and (3) the prior art references teach or suggest all of the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

It is submitted that a *prima facie* case of obviousness has not been established because the '008 patent does not teach or suggest all of the limitations of the claims as required by *In re Wilson*, there is no motivation to modify the '008 patent to achieve the presently claimed subject matter, and the '008 patent teaches away from the presently claimed subject matter.

Amended claim 18 is currently drawn to a method for making sports floor coverings comprising applying a formulation to a surface, said formulation comprising aqueous, isocyanate free polyurethane dispersions, wherein said dispersions have a solid matter content of ≥ 30 percent by weight and a solvent content of ≤ 10 percent by weight and wherein the polyurethane polymers of said dispersions have a number average molecular mass of 25,000 to 100,000 Daltons, and are obtained from polyols and polyisocyanates having an NCO/OH equivalent ratio of 1.5 to 2.5; wherein said dispersions are produced by a production method comprising the steps of: a) reacting 10-50 wt% of higher number average molecular weight polyol component (A)(i) having two or more hydroxyl groups reactive with polyisocyanates and a molecular weight of 250 to

20,000 Daltons, and optionally 0.50-5 wt% lower number average molecular weight polyol component (A)(ii) having two or more hydroxy groups reactive with polyisocyanates and having a molecular weight of 60 to 250 Daltons with 5-25 wt% of polyisocyanate component (B), consisting of at least one polyisocyanate homolog with two or more aliphatic or aromatic isocyanate groups, optionally in the presence of a catalyst, to create a polyurethane pre-adduct, then b) reacting the polyurethane pre-adduct of step a) with 0.5-5 wt% of lower number average molecular weight and anionic modifiable polyol component (A)(iii) having two or more hydroxy groups reactive with polyisocyanates and one or more carboxy groups inert with respect to polyisocyanates, which in the presence of base may be completely or partially converted into carboxylate groups, to produce the corresponding prepolymer, c) reacting the prepolymer of step b) with 0.25-2.5 wt% of a neutralizing component (C) for the complete or partial neutralization of the carboxy groups, followed by or simultaneous with d) dispersing the neutralized prepolymer of step c) in 10-60 wt% water, which optionally contains 10-70 wt% of formulation component (F) consisting of filler material, pigments, softeners, fiber materials, and other common additives, following which e) reacting the dispersion of step d) with 0.25-2.5 wt% chain extension component (D) consisting of at least one diamine with two amino groups reactive with polyisocyanate, and f) optionally reacting the

dispersion of step e) with 0.05-0.5 wt% of chain stopping component (E) consisting of at least one monoamine with an amino group reactive with polyisocyanate, wherein the wt% values in steps (a)-(f) are based on the overall weight of said dispersions produced.

In contrast, the '008 patent teaches a process for the preparation of stable, colloidal, aqueous **dispersions of cross-linked urea-urethanes** which comprises reacting (a) an aqueously dispersed, substantially linear, isocyanate-terminated prepolymer having a molecular weight of up to about 25,000 and containing (i) about 0 to 120 milliequivalents of ionic groups per 100 grams of prepolymer, and (ii) about 0.35 to 10% by weight, based on the weight of the prepolymer, of lateral and/or terminal, hydrophilic ethylene oxide units wherein components (i) and (ii) are present in an amount sufficient to provide a stable dispersion of the prepolymer in the aqueous medium, with (b) polyfunctional amine chain extenders having **an average functionality between about 2.2 and 6.0**.

a. All Elements Not Taught or Suggested

Applicants submit that the '008 patent does not teach or suggest each and every element of the presently claimed subject matter. Specifically, Applicants submit that the '008 patent does teach or suggest reacting the dispersion of step d) with 0.25-2.5 wt% chain extension component (D) **consisting of at least one diamine with two amino groups** reactive with polyisocyanate as

recited in amended claim 18.

In contrast to the presently claimed subject matter, the '008 patent teaches that the average functionality of the polyfunctional amino chain extender used in the '008 patent is above 2. Specifically, the average according to the '008 patent is between about 2.2 and 6.0. Accordingly, the '008 patent does not teach or suggest each and every element of the presently claimed subject matter.

Applicants submit that the '008 patent does not teach or suggest creating a polyurethane pre-adduct, then reacting the polyurethane pre-adduct with 0.5-5 wt% of lower number average molecular weight and anionic modifiable polyol component to produce the corresponding prepolymer, as recited in steps a) and b) of amended claim 18.

In contrast to the subject matter recited in steps a) and b) of amended claim 18, the '008 patent simply teaches preparation of the isocyanate-terminated prepolymers and their further reaction with polyfunctional amino chain extenders. Additionally, the '008 patent teaches the possibility of sequential reaction to produce the isocyanate-terminated prepolymer comprising reacting the polyisocyanate component, the organic component containing at least 2 isocyanate-reactive groups, and the component containing the hydrophilic ethylene oxide units. See the '008 patent at column 8, lines 3-5. Applicants submit that the '008 patent, **including those**

sections cited by the Examiner, does not teach or suggest creating a polyurethane pre-adduct, then reacting the polyurethane pre-adduct with 0.5-5 wt% of lower number average molecular weight and anionic modifiable polyol component to produce the corresponding prepolymer, as recited in steps a) and b) of amended claim 18. Accordingly, the '008 patent does not teach or suggest each and every element of the presently claimed subject matter.

b. No Motivation to Modify

Regarding motivation to modify a reference, the level of skill in the art cannot be relied upon to provide the suggestion to combine references. See *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308 (Fed. Cir. 1999). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." *In re Mills*, 916 F.2d 680 at 682.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984). In addition, if a proposed modification or combination of prior art references would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959).

Applicants submit that there is no motivation to modify the '008 patent to achieve the presently claimed subject matter because the a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose. Accordingly, as held by the court *In re Gordon* court there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984).

As described above, the '008 patent does not teach or suggest a chain extender having an average functionality of 2 as recited by claim 18. In contrast, the '008 patent teaches that the average functionality is between about 2.2 and 6. Additionally, in contrast to the '008 patent, the presently claimed subject matter recites a bifunctional chain extension component, i.e. the diamine recited in step e) of claim 18. As a result of the bifunctional chain extension, the polyurethanes of the present invention have a linear structure. Due to the structural and functional characteristics of the presently claimed chain extender and that of the cited art, each yield distinct products.

For example, the polyurethane according to the presently claimed subject matter has a **linear structure**. In fact, the linear structure according to the presently claimed subject matter is an ideally segmented linear structure. See the present specification, pages 16-18. In contrast, due to the chain extender having a functionality of greater than 2, the '008 patent yields a **cross-**

linked urea urethane product. Accordingly, Applicants submit that if the functionality of the chain extender according to the '008 patent were modified in manner consistent with the chain extender according to the present invention the '008 patent would no longer yield a cross-linked urea urethane product. As is evident in the *Background of the Invention Section* of the '008 patent, the cross-linked urea-urethane product is distinct from linear polyurethanes according to the present invention. See the '008 patent, column 2, lines 3-4 and 8-11. Since the '008 patent desired a cross-linked urea-urethane product, there would be no motivation to use the presently linear chain extenders. Accordingly, Applicants submit that there is no motivation to modify the cited art to achieve the presently claimed subject matter, a *prima facie* case of obviousness has not been established.

c. Teaching Away

Further, the *Dow* court held that "In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered for the person of ordinary skill is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention." See *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988). The court in *In re Gurley*, 27 F.3d 551 (Fed. Cir. 1994), held that "A prior art reference may be said to *teach away* when a person of ordinary skill, upon reading the

reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." The court in *Busch & Lamb, Inc. v. Barnes-Hind/Hydro curve, Inc.*, 796 F.2d 443 (Fed. Cir. 1986), held that "A reference should be considered as a whole, and portions arguing against or teaching away from the claimed invention must be considered."

Applicants submit that the '008 patent teaches away from the presently claimed subject matter because the '008 patent draws a clear line of distinction between linear polyurethanes as presently claimed and the cross-linked urea-urethanes disclosed therein. See the '008 patent, column 2, lines 3-11. In fact, the '008 patent expressly enumerates presumable drawbacks of linear polyurethanes, such as those presently claimed. Applicants respectfully submit that as the '008 patent aims to improve cross-linked urea-urethanes in favor of linear polyurethanes, a skilled artisan would be discouraged from following the path set out in the reference.

Additionally, Applicants respectfully submit that the isocyanate-terminated prepolymers of the '008 patent contain hydrophilic ethylene oxide units. See the '008 patent at column 2, lines 66-68, column 3, lines 20-23 and claim 1. As is evident from column 24, lines 54-57 and claim 1 of the '008 patent, the hydrophilic ethylene oxide units are necessary for to obtain a

stable dispersion of the cross-linked urea-urethanes disclosed therein.

In contrast, according to the production of the polyurethane dispersions of the presently claimed subject matter, no such hydrophilic ethylene oxide units are necessary. In fact, polyurethane dispersions containing ethylene oxide units are unsuitable for sports floor covering applications. This is because polyurethane dispersions containing these groups and formulations on the basis thereof will be incapable of withstanding permanent exposure to water in outdoor use and undergo swelling, disintegration or peeling off. Accordingly, Applicants submit that the '008 patent teaches away from the presently claimed subject matter as a skilled artisan would be lead in a path divergent from that taken in the present subject matter.

In view of the remarks set forth herein, it is submitted that the '008 patent does not render the presently claimed subject matter obvious within the meaning of 35 USC § 103 (a). Accordingly, the Examiner is respectfully requested to withdraw this rejection.

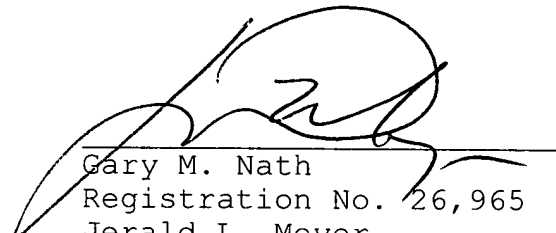
Conclusion

In view of the foregoing, Applicant submits that the pending claims are in condition for immediate allowance. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

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